PATENT SPECIFICATION

Application Date: July 14, 1936. No. 19507/36. 475,207

Complete Specification Left: July 13, 1937.

Complete Specification Accepted: Nov. 16, 1937.

PROVISIONAL SPECIFICATION

Improvements in or relating to Exercising Machines

I, ARTHUR HENRY KEMPSON, a British Subject, c/o Westwood, Morris & Company, of Neville House, Waterloo Street, Birmingham, 2, in the County of Warwick, do hereby declare the nature of this invention to be as follows:—

This invention relates to exercising machines, and has for its object to provide an improved construction.

A machine constructed in accordance with the present invention comprises a frame having a pedal-operated shaft, a wheel driven by said shaft, which wheel also constitutes a support for the frame, a saddle on the said frame, the whole structure being supported on a base by a hinged or flexible connection between the forward part of the frame and the base, and a support on the rear part of the base engaging the wheel and adapted to be driven rearwardly thereby.

In one construction the frame may be formed similarly to the rear part of an ordinary bicycle frame, but with the seat pillar tube extended downwardly and provided at its lower end either with a long transverse horizontal bearing or with a fork incorporating two transverse bearings in alignment which are spaced apart.

At the upper end of the seat pillar tube the saddle is provided in the usual way, and the seat pillar tube or member is provided with a bearing for the pedal crank axle. The rear part of the frame terminates at the junction of the chain stays and the rear fork, where the hub of the wheel is mounted, and this wheel may be driven in the usual way by sprocket and chain gearing from the pedal crank axle.

The wheel may be constructed similarly to the wheel of a bicycle and may have a tyre if desired.

The wheel is positively driven when the exercising machine is used, but it does not impart any motion to the frame because it rests upon a support on the base, which support is capable of moving rearwardly at a rate equal to the peripheral speed of the wheel.

The base may be formed of wood or of one or more metal pressings connected together, or it may be of a metal tubular construction. At its forward part, it is provided with a pair of spaced lugs or brackets in which a transverse shaft or tube is mounted, upon which the bearings carried at the lower end of the seat pillar tube are mounted. The fact that either a long horizontal bearing or two spaced bearings are provided, gives sufficient lateral stability to the structure.

At the rear part of the base two or more rollers may be provided adapted to be driven by the wheel associated with the frame, or alternatively, an endless band may be provided, this band being supported upon rollers so that its upper section can move rearwardly when driven by the wheel of the upper structure.

The machine may be provided with a forward structure including a handlebar, and this may be mounted as a fixture on the base, or the handlebar may be carried by a forwardly extending bracket secured on the seat pillar tube. Alternatively, an appliance without a handlebar can be used in conjunction with a separate handlebar attached to a wall or any other suitable structure.

If required braking means may be applied to the pedal crank axle or to the rear wheel or to the supporting means on the base which are driven by the rear wheel, and such braking means may be capable of adjustment by a hand lever or member controlled by the person using the machine.

Dated the 8th day of July, 1936.

FORRESTER, KETLEY & Co.,
Chartered Patent Agents,
Central House, 75, New Street,
Birmingham, 2, and
Jessel Chambers, 88/90, Chancery Lane,
London, W.C.2.

COMPLETE SPECIFICATION

Improvements in or relating to Exercising Machines

I, ARTHUR HENRY KEMPSON, a British Subject, c/o Westwood, Morris & Company, of Neville House, Waterloo Street, Birmingham, 2, in the County of

[Price

Warwick, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to exercising machines of the kind which includes a frame provided with a seat, a crank axle with pedal cranks, and braking means against the resistance of which the user of the machine has to operate said pedal cranks.

The chief object of the present invention is to provide a simple and compact apparatus, the operation of which will afford exercise and sensations comparable to those obtained during the propulsion of a pedal cycle along a road.

According to the invention, the frame aforesaid comprises a front member carrying the seat and rear members between which is rotatably mounted a wheel driven by said crank axle, said wheel engaging and driving a movable support on a base disposed wholly below said frame and said front frame member being hingedly connected at its lower end to said base.

In order that my invention may be clearly understood and more readily carried into practice, I have appended hereunto two sheets of drawings illustrating the same, wherein:—

Figure 1 is a side elevation of one form of exercising means according to the present invention, the machine being shown provided with means for protecting the clothing of the user,

Figure 2 is a perspective rear view of the machine with the dress guards removed,

Figure 3 is a part-sectional side elevation, and

Figure 4 is an end view of the machine, whilst

Figure 5 is a sectional side elevation of a modified wheel support.

The base of the exercising machine illustrated in Figures 1 to 4 comprises two longitudinal metal tubes 10 disposed in spaced parallel relationship and connected at their ends by cross-bars 11. Suitable feet 12 on which the machine stands are fixed at the extremities of these cross-bars 11. Instead of being of tubular construction, the base may be formed of one or more metal pressings, or of wood.

The frame of the machine, which may be of generally triangular construction and similar to the rear part of an ordinary pedal cycle frame, has its forward part hingedly connected to said base; for example, it may be hinged upon a bolt or spindle 13 which connects the base tubes 10 intermediate their ends and is disposed transversely of the latter. Alternatively, where the base is formed of pressed metal or of wood, it may be provided with two spaced brackets in which is mounted a shaft or tube corresponding to the spindle 13.

In the convenient arrangement shown, the frame comprises a rearwardly-raked front tube 14 to the upper end of which are attached by a pivot bolt or pin 15 the ends of two other tubes 16, these latter being disposed side by side in downwardly divergent relation and inclined oppositely to the tube 14. The tube 14 carries a suitable cycle type saddle 17, mounted on an adjustable pillar 18, and it will be seen that in their relative arrangement these tubes 14, 16 correspond closely to the saddle tube and rear forks, respectively, of the normal pedal cycle frame.

On the front or saddle tube 14 is mounted a bracket 19 which provides a bearing for a transversely extending axle 20 having pedal cranks 21 at its ends, the tube 14 being continued below the lug 19 and terminating in a fork 22. The spindle 13 passes through aligned holes in the arms 23 of this fork 22, which arms are spaced well apart to give the necessary lateral stability to the structure. Alternatively, the lower end of the tube 14 may be provided with a transverse bearing of suitable length.

Each of the divergent rear tubes 16 has a solid or plugged end 24 which engages telescopically with a sleeve 25 pivoted upon the cross-bar 11 which forms the rear end of the tubular base. In these sleeves 25 may be housed compression springs 26 engaging the ends 24 of the tubes 16, so as to carry part of the weight of the frame, the tube 16 being provided with stop flanges or shoulders 27 which limit their movement inwardly of the sleeves 25.

The rear tubes 16 are provided with oppositely-disposed slotted lugs 28 adapted to receive the ends of a spindle 29 associated with a wheel 30, which is preferably of ordinary cycle type and may be fitted with a pneumatic or other tyre 31 if desired.

The hub 32 of this wheel has secured thereto in known manner a sprocket 33, which is connected by a chain 34 to a chain wheel 35 on the crank axle 20.

To stiffen the frame of the machine, the latter may be provided with chain stays 36 corresponding to those of a pedal cycle and extending from the rear tubes 16 to the bracket 19.

The rear end of the frame is supported by engagement of the tyre 31 or periphery of the wheel 30 with a movably-mounted member, which is so arranged that the

wheel 30 can be rotated by means of the pedal cranks 21 and chain 34 without imparting any motion to the machine as a whole. As already mentioned the springs 26 carry a part of the weight of the frame, but it should be understood that these springs are not essential to the invention.

This movable rear support comprises, in the construction illustrated in Figures 1 to 4, an endless band 37 supported upon rollers 38 so that its upper run is free to move rearwardly when the wheel 30 is rotated in a clockwise direction. Spindles 39 associated with the rollers 38 may be supported in bearings in the sides of a channel-shaped carrier 40. This carrier 40 is attached to the base of the machine in any suitable manner; for example, the rear cross-bar 11 may pass through one end thereof, whilst the other end may be secured to the longitudinal base tubes 10 by a transverse bolt 41.

In the alternative arrangement shown in Figure 5, the periphery of the wheel engages three grooved rollers 42 mounted in the carrier 40, but there may of course be two, four, or more of such rollers.

The forward end of the base may carry a suitably-supported handlebar 43, which may be of normal cycle type and which enables the user of the machine to steady himself longitudinally of the machine whilst operating the pedal cranks 21.

The handle bar 43 may be provided with the usual stem 44 which is adjustably mounted in a vertical tube 45 attached at its lower end to the front cross-bar 11 of the base. The tube 45 may be stayed laterally by tubular or other downwardly divergent members 46 connecting its upper end to the base cross-tube aforesaid and a third stay 47 may connect a lug or clip 48 on the tube 45 to the bracket 19 on the frame proper.

Alternatively, the handlebar 43 may be carried by a forwardly-extending bracket secured to the saddle tube 14, or the machine may be used in conjunction with a separate handlebar attached to a wall or other suitable structure.

It will be understood that, owing to the hinged connection between the front of the frame and the base, the pressure of the wheel 30 engages the band 37 or rollers 42 with a pressure dependent upon the weight carried by the saddle 17, and the machine is " ridden " in exactly the same manner as a pedal cycle, the band or rollers aforesaid taking the place of the road surface.

A suitable resistance to the operation of the pedal cranks 21, corresponding to that experienced when propelling an ordinary cycle along a road, is provided by an expanding brake 49 associated with the wheel hub 32, or any other suitable means acting on the wheel or crank axle 20. Alternatively, the braking means may be applied to the endless band 37, rollers 42, or other support for the wheel 30, or the wheel support may of itself provide sufficient resistance to operation of the cranks 21 to render special braking means unnecessary.

Where such braking means are provided, their adjustment may be effected, if necessary whilst the machine is in use, by a suitable control; for example, by means of a rotatable operating knob 50 mounted on the handlebar 43 and adapted to operate the brake through the medium of a cable 51, a suitable construction being that described in my prior Specification No. 432,220.

To protect the clothes of the user, the machine may be provided with a dress guard 52 enclosing the upper part of the wheel 30 and a second guard 53 may be arranged to extend over the upper run of the chain 34 and part of the periphery of the chain wheel 35.

I am aware that it has previously been proposed to provide a " home trainer " for cyclists which comprises a stationary framework with standards supporting an axle on which is mounted a large hollow drum provided with a continuous track on its inner surface, said track being engaged (and said drum driven round) by a running wheel mounted in a frame which is pivotally suspended from said axle and also carries a seat, cranks, and gearing connecting said cranks to said running wheel. In this prior construction, a brake is preferably provided for stopping the rotation of the drum at any time.

It has also been proposed to provide exercising or recreative apparatus in which a bicycle is arranged with its wheels in contact with a large drum or vertical endless track, the bicycle being anchored by means of a swinging link to a suitable fixed point.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An exercising machine of the kind referred to, wherein said frame comprises a front member carrying the seat and rear members between which is rotatably mounted a wheel driven by said crank axle, said wheel engaging and driving a movable support on a base disposed wholly below said frame and said front

frame member being hingedly connected at its lower end to said base.

2. An exercising machine according to Claim 1, wherein said movable support comprises an endless band carried by rollers, the periphery of the wheel resting on the upper run of said band.

3. An exercising machine according to Claim 1, wherein said movable support comprises a plurality of grooved rollers on which the periphery of the wheel rests.

4. An exercising machine according to Claim 2 or Claim 3, wherein said rollers are freely mounted in bearings in a carrier of channel form secured to said base.

5. An exercising machine according to any of the preceding Claims, wherein the front part of the frame is provided with a transverse bearing or two laterally-spaced aligned bearings hingedly connected to said base.

6. An exercising machine according to any of the preceding Claims, wherein said base is of metallic tubular construction.

7. An exercising machine according to any of the preceding Claims, wherein compression springs are interposed between the ends of said rear frame members and said base.

8. An exercising machine according to Claim 7, wherein said springs are housed in sleeves which telescopically engage the ends of said frame members and are pivoted to said base.

9. An exercising machine substantially as described with reference to, and as shown in, the accompanying drawings.

Dated the 2nd day of July, 1937.
FORRESTER, KETLEY & Co.,
Chartered Patent Agents,
Central House, 75, New Street,
Birmingham, 2, and
Jessel Chambers, 88/90, Chancery Lane,
London, W.C.2.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1937.

475,207 COMPLETE SPECIFICATION

SHEET 1

[This Drawing is a reproduction of the Original on a reduced scale.]

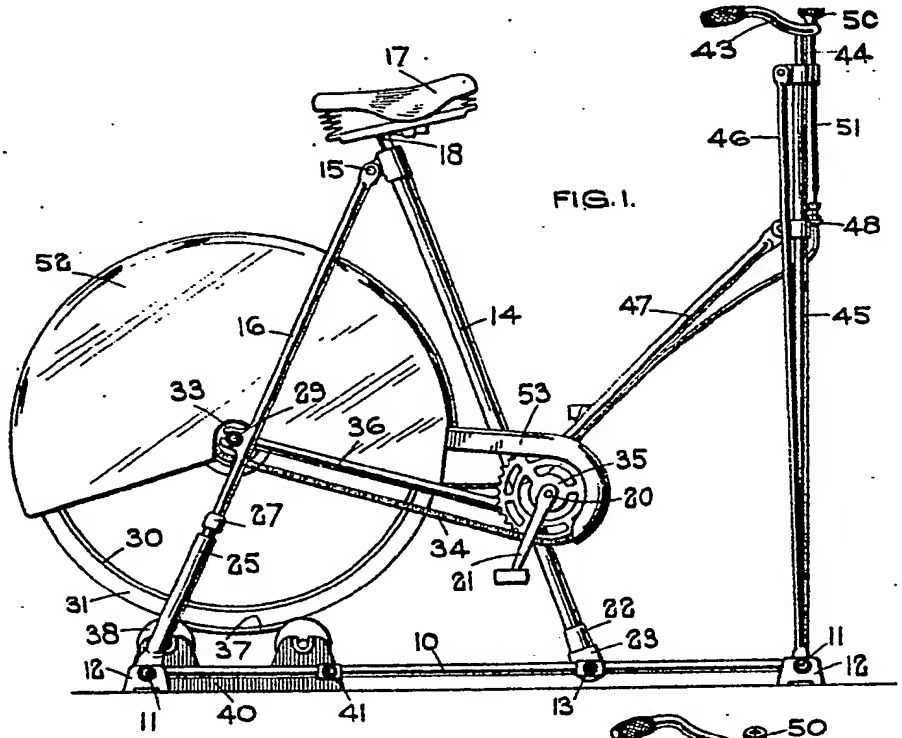


FIG. 1.

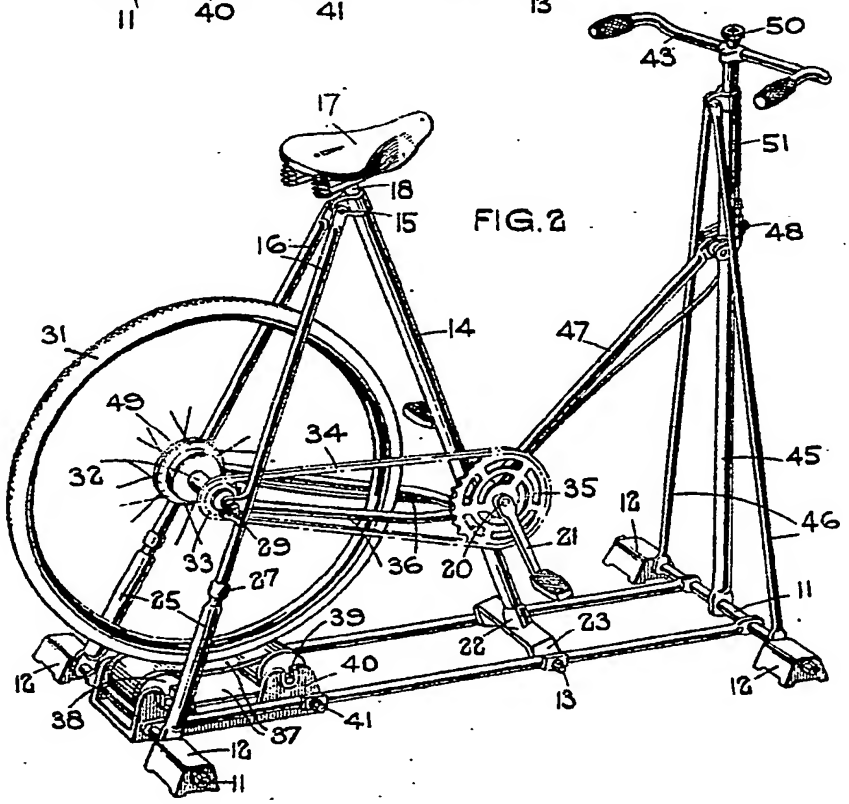


FIG. 2.

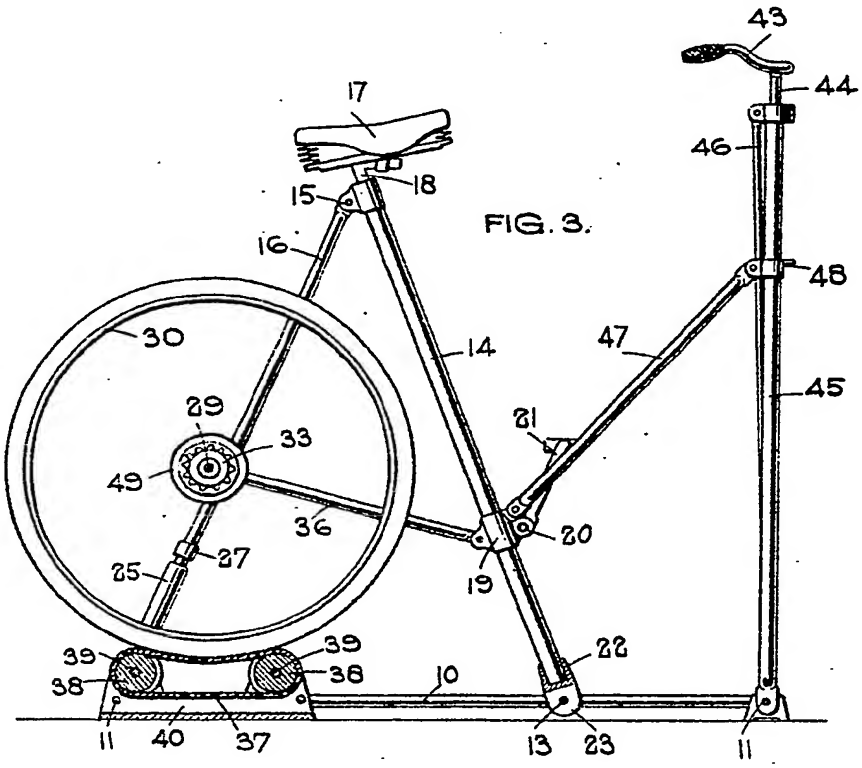


FIG. 3.

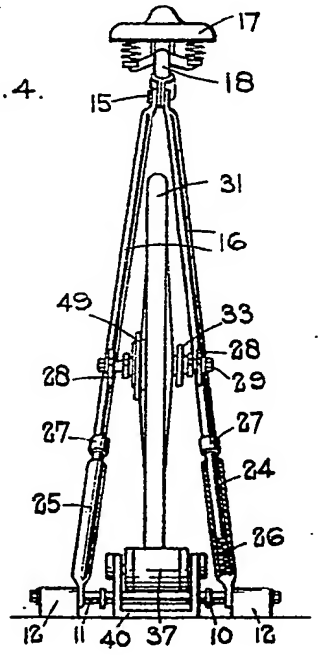


FIG. 4.

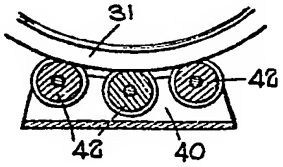
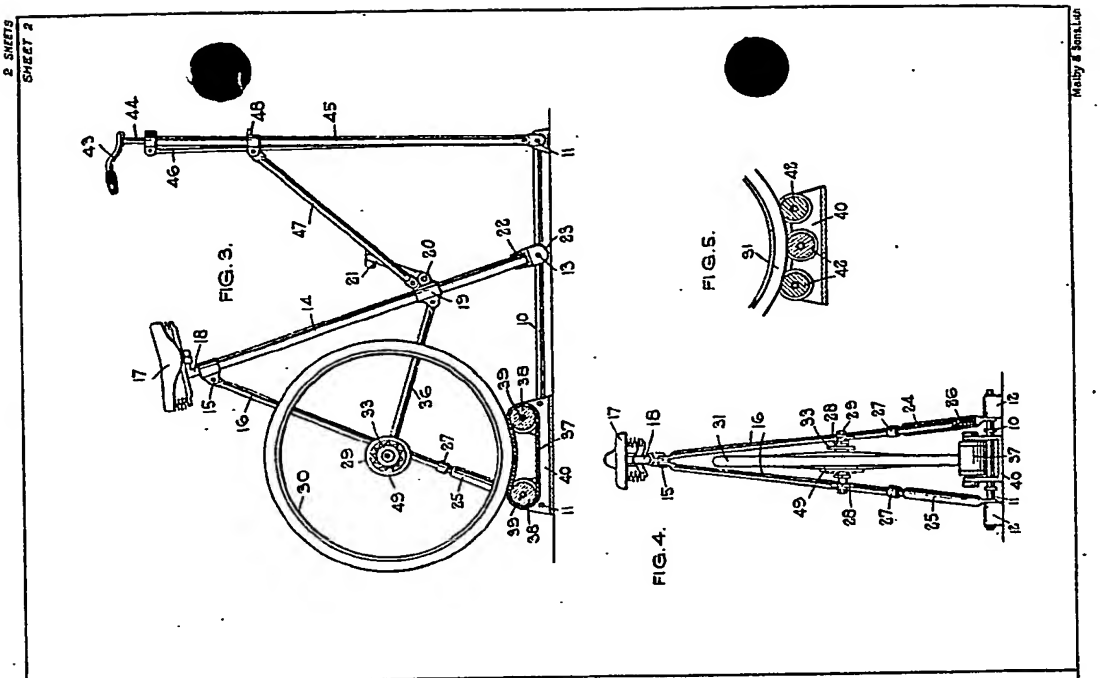


FIG. 5.



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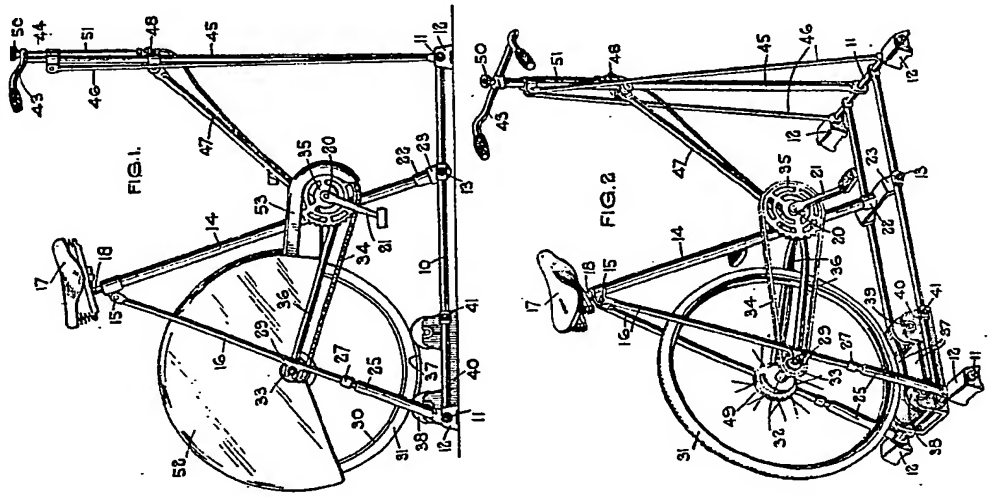

Malby & Sons, Ltd.

[This Drawing is a reproduction of the Original on a reduced scale.]